

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A device, comprising:

an interface member including a material of selectively variable density;

a manipulandum movable in a degree of freedom, the manipulandum configured to penetrate the material;

a sensor configured to output a position signal based on the position of the manipulandum; and

an actuator configured to change the density of the material within at least a portion of the interface member in response to the position signal, wherein the change in density of the material imparts a haptic effect to the manipulandum. ~~output haptic feedback by applying a compressive force to the material based on the position signal.~~
2. (Original) The device of claim 1, wherein the material includes a plurality of compressible beads.
3. (Original) The device of claim 1, wherein the material includes a plurality of polystyrene beads.
4. (Original) The device of claim 1, wherein the interface member includes a simulated bone structure.
5. (Currently Amended) The device of claim 1, wherein the material includes a first layer having ~~its own~~ a first density and a second layer having ~~its own~~ a second density, wherein the

actuator is configured to change the density of the second layer to be different from the density of the first layer as the manipulandum is moved from the first layer to the second layer.

6. (Original) The device of claim 1, wherein the actuator is a clamp coupled to the interface member.

7. (Original) The device of claim 1, wherein the actuator is a vacuum coupled to the interface member.

8. (Original) The device of claim 1, the actuator being a first actuator, the device further comprising a plurality of actuators including the first actuator, each actuator from the plurality of actuators being an individually actuatable clamp.

9. (Currently Amended) A device, comprising:
a manipulandum movable in a degree of freedom;
a sensor configured to output a position signal based on a position of the manipulandum;
a retainer defining an interior in which a material is disposed, the material configured to receive an object moved by the manipulandum and having a selectively variable density; and
an actuator coupled to the retainer, the actuator configured to ~~output haptic feedback via the retainer based on the position signal.~~ change the density of the material within at least a portion of the interior of the retainer in response to the position signal, wherein the change in density of the material imparts a haptic effect to the manipulandum.

10. (Original) The device of claim 9, wherein the manipulandum includes a first portion and a second portion, the second portion configured to be removably coupled to the object.
11. (Original) The device of claim 9, wherein the manipulandum is configured to move in a rotary degree of freedom about an axis, and move simultaneously along the axis.
12. (Original) The device of claim 9, wherein the interface member includes a simulated pedicle of a vertebrae.
13. (Currently Amended) The ~~device~~ device of claim 9, wherein the interface member includes a simulated bone structure.
14. (Original) The device of claim 9, wherein the retainer is configured to compress the material in response to actuation of the actuator.
15. (Original) The device of claim 9, wherein the retainer is configured to modify a density of the material based on the position signal.
16. (Original) The device of claim 9, wherein the retainer is a clamp having an opening, the actuator including a motor configured to modify a size of the opening based on the position signal.
17. (Original) The device of claim 9, wherein the manipulandum is a screwdriver and the object is a screw.

18. (Original) The device of claim 9, further comprising:
a guide configured to receive at least a portion of the manipulandum, the guide being removably coupled adjacent to the retainer.
19. (Original) The device of claim 9, wherein the manipulandum is movable in two degrees of freedom.
20. (Original) The device of claim 9, wherein the manipulandum is movable in a rotary degree of freedom and a linear degree of freedom.
- Claims 21-24. (Cancelled)
25. (Currently Amended) The interface member of claim [[24]] 33, further comprising a simulated bone structure.
26. (Currently Amended) The interface member of claim [[24]] 33., wherein the material portion includes a plurality of compressible beads.
27. (Currently Amended) The interface member of claim [[24]] 33., wherein the material portion includes a plurality of polystyrene beads.
28. (Currently Amended) The interface member of claim [[24]] 33, wherein the material includes a first layer having ~~its own~~ a first density and a second layer having ~~its own~~ a second density, wherein the actuator is configured to change the density of the second layer to be

different from the density of the first layer as the manipulandum is moved from the first layer to the second layer.

29. (Cancelled)

30. (Currently Amended) A method, comprising:

receiving a position signal via a sensor, the position signal associated with a position of a manipulandum, at least a portion of the manipulandum penetrating a the interface material within an interface member, the material having a selectively variable density; and

adjusting the density of the material within at least a portion of the interface member via an actuator coupled to the sensor, wherein the adjusting of the density imparts a haptic effect onto the manipulandum.

~~outputting haptic feedback by varying a density of the interface material based on the position signal.~~

31. (Currently Amended) The method of claim 30, wherein the ~~varying~~ adjusting the density includes applying a compressive force to the interface material ~~via an actuator.~~

32. (Currently Amended) The method of claim 30, wherein the ~~varying~~ adjusting the density includes applying a vacuum to the interface material ~~via an actuator.~~

33. (New) An interface member for use with a haptic feedback device including a manipulandum movable in a degree of freedom, the interface member configured to be penetrated by the manipulandum, the interface member comprising:

a material portion configured to be penetrated by at least a portion of a manipulandum,
the material portion and having a selectively variable density;

a sensor configured to measure a position of the manipulandum within the material
portion and output a position signal associated with the measured position; and

an actuator coupled to the retainer, the actuator configured to change the density of the
material portion in response to the position signal, wherein the change in density of the material
imparts a haptic effect onto the manipulandum.